The
Practical Winery
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The Practical Winery

August - September

1980

the Filters

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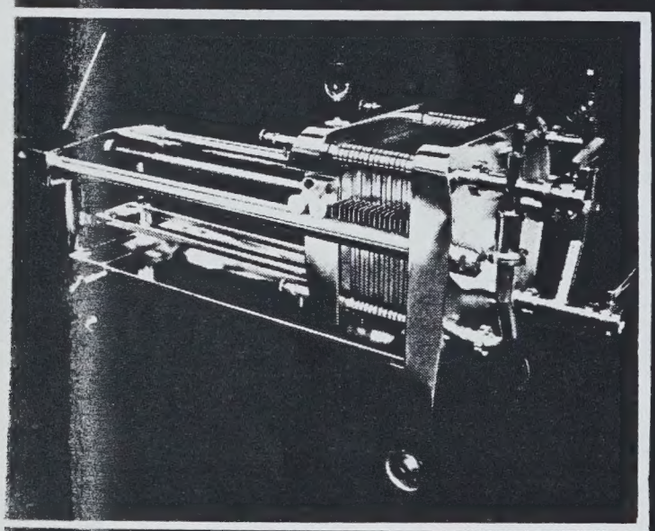

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Joe and Patricia Campbell of Elk Cove Vineyard, Oregon (Southwest of Portland) came out of the vineyard for this shot where they were dusting off their vines. When cleaning off their porch they weighed the ash and calculated a fallout of five tons per acre. Elk Cove was among the hardest hit areas after the second eruption, and Joe said a 25% loss of Pinot Noir shoots was the only damage aside from the obvious discomfort.

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The Practical Winery

THE PRODUCERS' ADVOCATE

August-September
Volume 1. No. 3

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EDITOR'S CORNER

DBCP in a Wine- State Bans Sale... That was the caption, front page San Francisco Chronicle Friday July 11, 1980. If the reader took the time to turn to the back page they would have come to the quote of Beverlee Meyers, dierctor of the State Department of Health Services "There is no reason for California wine consumers to alter their wine consumption patterns based on these DBCP findings". Unfortuneatly the majority only read the caption, and remember it all to well. It's up to us as wine educators to bring up the story and try to ease the consumers doubts. Yes, we are wine educators- every time we show people through the cellar, or do a meet the winemaker bit at a local wine shop. As near as I can piece togeather the story, the only winery involved (so far) is Delicato Vineyards, South of Stockton. Of the 45 wineries tested only Delicato had more than the 1 part per billion of the cancer causing agent in it's wine, and some 44 ppb in its' shallow wells' water. How 7.2 ppb got into their Grenache rose is a moot point, but as of the latest news release available at press time, the state had released from embargo eleven tanks, and the rest were undergoing further tests. I hope for all of us they can get the front page for vindication, but it never seems to happen that way.

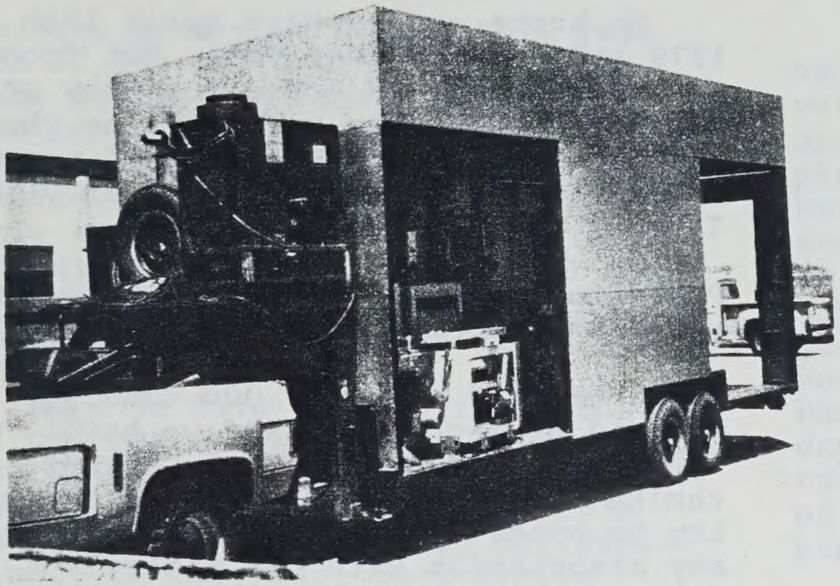
Speaking of wine education, there is a Society of Wine Educators (if you didn't know) who we should support as the benifit is obvious. The organization is in the throws of that early organizational problem, lack of direction, but is destined to do great things. If you are interested in joining, finding out whats going on, or helping with whats going on, write to The Society of Wine Educators, Box H, East Brunswick, N.J. 08816.

While I'm doing unsolicited plugs, I saw a few items of note at the last A.S.E. convention, of interest.

Harmsco Industrial Filters; really a swimming pool manufacturer is selling a stainless filter system which takes regular cartridges and is still selling for a realistic price. after all what is it but a classy can, but they have little or no knowlege of wine filtration so if you need someone to answer your questions then prehaps the expertise of the larger manufactures is worth paying for. These are distributed by Corrick International, 119 Locust Street, Santa Cruz. CA 95060

There is a strange plastic cork on the market and if anyone uses it I would love to publish the results. Who knows, could be a look into the future. Cellukorks, sold by Lermer Packaging Corporation, 520 South Ave., Gar wood, N.J. 07027.

In the North Bay a gentleman, Guy Napolitano is making small commercial sized crusher-stemmers and presses which appear better made than the Italian models they are patterned after. They are made out of all American made parts and priced lower than the imports which is a switch. contact International Scientifika, LTD. P.O. Box 825,



The Wine Line
7416 Sedgefield Avenue • San Ramon, CA 94583
415/828-4651

When touring Bordeaux one soon realizes that less than 10% of the chateaux have their own bottling lines or warehousing for case storage. Only the top few chateaux maintain bottling equipment, and most of it would be used as fern supports in tasting rooms over here. The predominant system (discounting co-ops) is chateau bottling and removal of the bottled wine to the negociants warehousing. This bottling is done by portable lines of varying degrees of sophistication, but they all add up to less capital investment in machinery which is used only a fraction of the year.

Dr. Kilham is the first to bring this idea to California and is doing it with style; a fully self-contained trailer mounted bottling line including a bottle washer and sterilizer, polish and sterile filtration equipment a Seitz fulla 12 filler and corker, Label-aire pressure sensitive labeler generator and steam source, all mounted on a stainless steel trailer. The second line currently on the drawing board will also incorporate an automatic foil spinner all mounted in a positive pressure trailer.

Dr Kilham mentions the line is capable of 45 B.P.M. but the current record is 1480 cs/day, the restrictions being either the wine condition, extremely dirty, or gassy (foaming), or the winery layout and the speed with which the glass can be moved on and off the line.

I was interested in the legalities of wine stability and Dr. Kilham broke it down to the three filtration options available:

1) No filtration- The winery signs a release for future wine stability.

2) Polish Filtration- Same release as above.

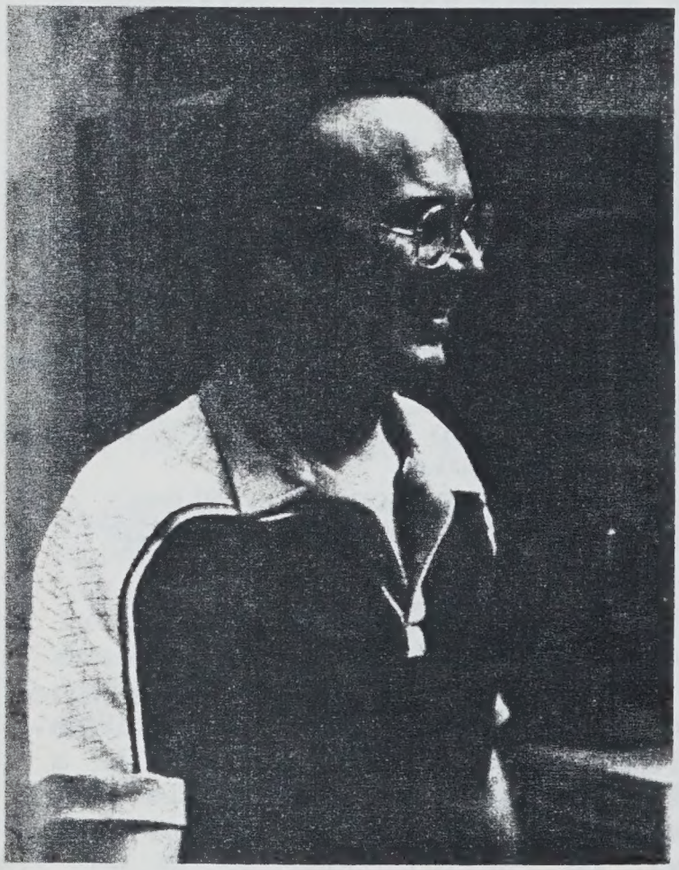
3) Sterile Filtration- The Wine Line will guarantee the wines' microbiological stability, and should a problem arise, two laboratories will examine the wine to determine the origin of the problem. If it was the bottles or corks then The Wine Line can't be held responsible.

On the bright side Dr. Killam has his doctorate in microbiology and is also the vice president of the Ghia Corp, and says the only post bottling problems in over 20 wineries so far have been non-microbiological in nature.

The bottom line of these services is of corse affected by ecomomy of scale, but a run of 10,000 cases not far from his home base in Pleasanton can get down to approximately $1 per case.

Lawrence Winery

CAPICITY-850,000 GALLONS



This interesting interview with Jim Lawerence steered more toward marketing instead of the usual equipment and cellar techniques slant, and with good reason. Jim, with expierence working in Central Valley winer-wineries and substantial investment built this winery in San Luis Obispo County. Somewhat of an overnight success, anyone who can sell a well made Central Valley wine for premium prices has something to teach us all.

We broke ground here April 19th 1979 and crushed that fall. Out front we are planting 28 acres for show and tell; we were going to plant the whole 100 acres, but with the cost of money theres no way, I get a payout in 2007 I can't wait that long.

Practical Winery: Do you have any of your own grapes?

J.L. We have about 10,000 tons we get rid of each year, and we have 400 tons of Chenin Blanc I know are coming this year, but what we do is try to operate our vineyards without any association with our winery. I don't see any equasion between being a viticulturist and an enologist. My basic philosophy is that I want the best possible raw material, so when I screw it up I come out with the highest possible merchandise I can have. We all make mistakes, anyone who says they don't ever make a mistake- bull. We use the best of our own vineyard and sell the rest. We then buy what we need from five other growers. If you have your own vineyards and you have mildew or rot out there how do you turn yourself down?

One of the things that scares me this time about the slump in the market more than in the '72-'73 slump is then we were coming off two large increases of production in the San Joaquin Valley, and this time we haven't had any large plantings for the last 4 or 5 years, and we planted 18,000 acres in the coastal region and the valley, 50-50. This year about 28,000 acres are being planted with a market that has basically dropped out. Something no one is really aware of except the guys who are in there trading in the bulk market. The big franchised names aren't feeling it yet, but we lesser known names are seeing it. Earlier this year we had the first big dump by Mirassou, then Beringer dumped a big block into the market place, then Cucomonga #1, Bear Mountain of several hundred thousand gallons of dry white at 65¢ to the stick, one guy after another. Now Sierra is dumping their stuff, It's all going down cheap. About 75,000 tons over

in Kern County not placed this year, nd 12,000 is Chenin Blanc. Last ear it all had homes, no price, but it all had homes, it's cut acros all colors. Half of this area is not placed. The wholesalers are saying this thing's going back to 20% after the election's over, stores are cutting back, in March the overall wine shipments were down, the first time in years that's happened.

Here we have some barrels, most of our barrels we wrap with plastic and inject with CO_2 trying to keep oxidation out of the wines. It's the style we're trying to do, especially in the reds, very fruity lighter style type reds, but still 12-14% alcohol and low in tannin. I feel the mass market is 18-40 years old and they are still learning an appreciation of wine; they haven't had an opportunity to have a lot of of fresh wines from the central coast region. We're trying to fill a market gap for these light style wines.

P.W. Will you continue to bottle in six months?

J.L. We will continue to bottle wines of this style as long as the market is growing in appreciation of wine. We will have a reserve coming out in the more traditional style, but we fill the gap in the market of starting people on light varietal wine. They will want more and more character and eventually they will be drinking David Bruce and Ridge style wines, but we help them get going on the varietal progression. Also there's no question about it, it helps us from a cash flow standpoint. I've

"I DON'T BELIEVE PROFIT IS A DIRTY WORD ANY MORE"

been knocked several times for being, in quotes, "pricy", but I don't believe profit is a dirty word any more. We ent through the '60's and '70's when profit was a dirty word and I don't think that's true in the '80s.

Here in this Valley crusher/stemmer we inject CO_2 through the water washouts and try to keep the must under CO_2 also. Everything in the plant except the centrifuge and the bottling line are American made and I wish the Italians had the bottling line back. We flood the tanks with CO_2 and crush into them. This year we are going to all machine harvest because last year the hand harvest would come in late in the day. I have control over the machines but I don't have control the number of people and the border patrol picking up the people.

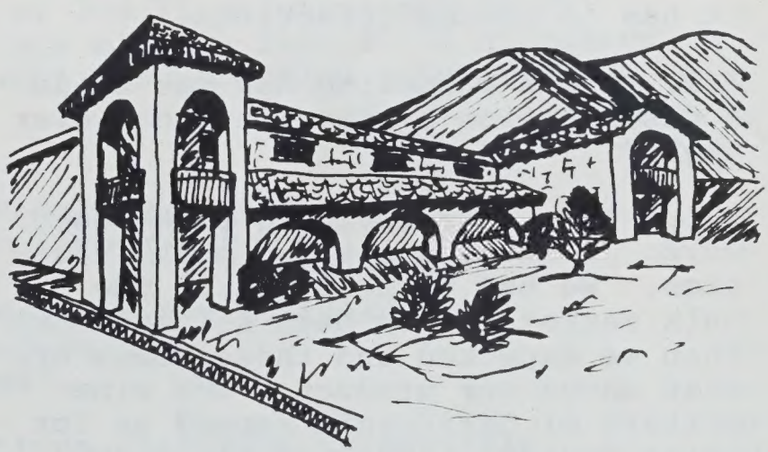
We are using a Valley continous press and all American oak; I'm not buying anything foreign anymore.

P.W. Why did you start using the wooden boxes?

J.L. It was new, a different look, it was a way for me to get market entry. Any winery no matter how big or small has a cost built into the wine for promotion and I said we're going to keep down our travel, our advertising, our promotion and we will put it into the box. It gets away from header cards, display bins and promotes floor stacks.

P.W. Whats the cost per box?

J.L. It's about $3.50 per box. I felt there was no reason to enter the marker if we were going to be like everyone else. So we analyzed the



market for a style we could fill, a location for the winery, etc. We're trying to establish a franchised brand. At our pricing level which is at Robert Mondavis and above, nobody has ever sold 15.000 cases the first year, we've moved past the 50,000 case mark in the first 6 months. Our repeat business on third order or better is running 57%, second order is 75%. Some markets are very good, some aren't. It comes down to your wholesaler, what kind of a house is it? If the average salemsan is over 40 years old, no matter how bad you have to sell wine, stay out of that house. 25% of the salesmen in a wholesale house are salespeople, 50% are ordertakers, they meet their quotas, the other 25% should be fired

P.W. So you basically are looking for a young sales staff in your who wholesalers.

J.L. You're looking for young salespeople, and you have to count on that 25% who are the born salesmen, and if you get 5% of them to like your product you'll be lucky. You've got to give them something to work with. In our case we have the slats so it's an instant wine rack, but these guys have heard every story, gimmick, what have you, how are you going to inspire them to sell your product? You've got to give them the tools, but 3 guys will build a market, if it's in a big or small town, if a few guys start moving boxes then the other salesmen will see that and start doing the same; it has to become infectious.

P.W. I was wondering how you build a distribution system like that over night?

J.L. It's like anything else- hard work. I could use a two month vacation. We had to pull out of the bulk market, we've been selling more than we expected and those boxes are what moved our product. The wine writers of California rapped us for being "pricy". This is the only state you'll get rapped for making a profit, the rest of the nation accepts profit is reasonable. Who is to say we're priced too high. You put 4-5 million down to build a winery and at 20% interest that's one million a year you have to pay out in interest alone. I should be 30% higher (in prices) to turn this thing around, 30% fob. I can't move because I'm new on the market. If I came out today with these wines I'd price them 30% higher.

P.W. I notice you have 22 varieties which ones aren't moving well?

J.L. I would have to say of our wines, the White Riesling, the Gamay Rose because it's to dry for the consumer, and the Semillon - but who the hell cares, we made the Semillon for Beringer to be blended with their Sauvignon Blanc. The bulk market is great, you make the wine to the specification of your buyer, or potential buyer, move it out in January or Febuary and get your cash in net 30 days. The cases are another story, you bring it in, it's two months on the floor, a month to ship it, the wholesaler stalls you 45-60days, you're 6 months away from your cash. Great Business!

Some of the varietals last month were 7% of the sales, 3.5-7% of the sales.

P.W. Well I guess they should be about 5% if you expect to sell even across the board.

J.L. Well you won't, red, white and rose should represent 60-70% of sales in 1.5 and regular bottles and those are going into floor stacks; if we are put on a shelf we'll die. We have to have the floor stacks, the displays, otherwise we'll pick up the merchandise in 24 months for replacement. We don't try to overload our wholesalers and tell them not to overload the retailers, but that wholesaler is what is going to make or break you.

SO_2 DETERMINATIONS USING THE RIPPER METHOD AND A PLATINUM ELECTRODE

IF YOU OWN A Ph METER AND RUN SO_2 DETERMINATIONS, THIS IS FOR YOU!

The problems with the Ripper method have been:

1) Some polyphenols are oxidized by iodine causing higher readings
2) In deep red wines it is hard to see the end point.
3) If several different people run the determination they will see different endpoints.

Using a platinum electrode will not help with the first problem, but will end the second two. This method, instituted by Peter Bachman at The Monterey Vineyard is fast spreading to other wineries. The amendments to the Ripper Determination are adding 2 ml of 20% KI solution instead of starch, and mixing in a stirred beaker with the platinum and reference electrode present. The endpoint will be seen as a slight rise in the needle, then a fast drop.

Free SO_2 via Amended Ripper Method:

Pipet 50 ml of the wine sample into a 150 ml beaker. Add 5 ml 1:3 sulfuric acid, 2 ml of 20% potassium iodide (KI) solution. titrate rapidly with 0.02 N iodine solution, the endpoint is as described above, the needle inflection. The temperature of the solution should not exceed 20°C.

Total SO_2 via amended Ripper Method:

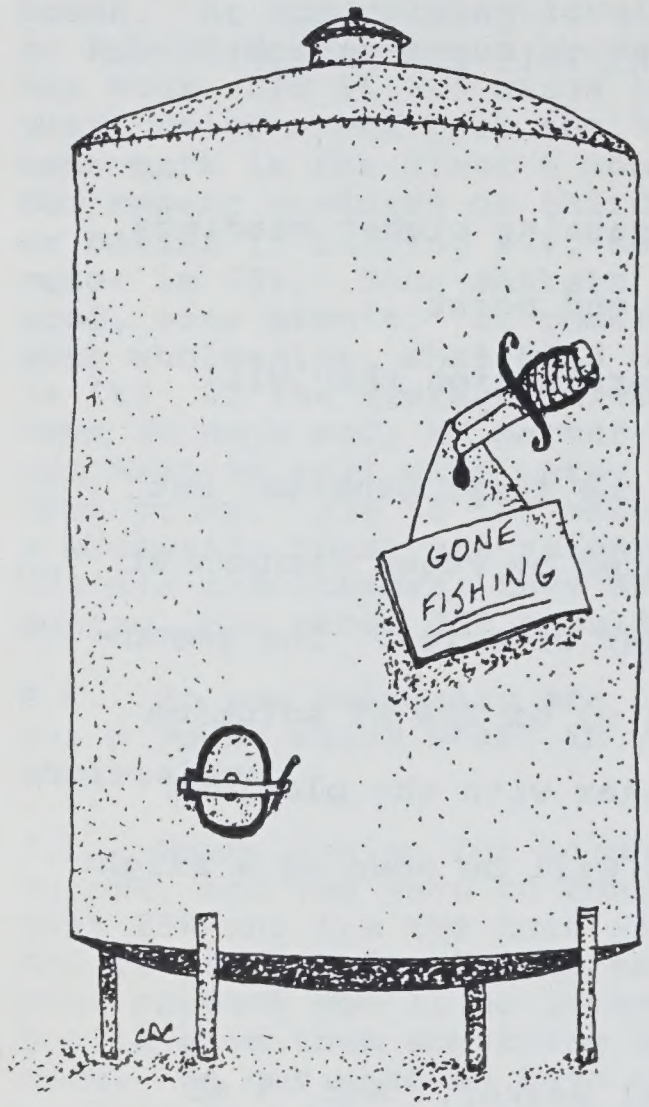
Pipet 20 ml of the wine sample and 25 ml of N sodium hydroxide solution into a 250 ml Erlenmeyer flask. Mix, stopper the flask and let stand for 10 min. to permit hydrolysis of the acetaldehyde-sulfurous acid complex. Add 2 ml of 20% KI solution and 10 ml 1:3 sulfuric acid (H_2SO_4). Pour this mixture into a 150 ml beaker and while mixing titrate rapidly with 0.02 N iodine solution to a needle inflection.

Calculations for Free or Total SO_2.

$$SO_2 \text{ (mg/l)} = \frac{(V)(N)(32)(1000)}{v}$$

where V= volume of iodine solution used for the titration (ml).
N= normality of the iodine solution.
v= volume of the wine sample (ml).

I am advised the cheapest platinum electrode is avalible from Chemtrix, Hillsboro, Oregon. (about $80)



How to go Bankrupt in one Easy Lesson

A warehouse full of mostly white wines, some quite good. Tank storage of 70,000+gallons, ten years of production in a relativly underdeveloped wine region which is destined to be one of the best in the world. Sounds like a winning combination-yet if you walk through that winery today all the wood is gone, a price tag on everything else, the winery is closing. It had a couple of chances to make it, but through gross mismanagment it's gone belly up. Let it suffice to say it is a lesson to the wise. We were lucky enough to get the whole scoop and nothing but the scoop from someone who had a ring side seat. The names have been changed to protect the innocent.

Mr. Smith, armed with a Davis viticulture degree and some European experience planted 10 acres in 1963 on a somewhat proven area in that it's wines had won honors at the 1904 St. Louis exposition. He selected an area outside California for easier market entrance, and produced his first commercial wine in 1969. The first few years found him fermenting out his 3,000 gallons in the livingroom as the cellar was to cold. By 1972 he had quit his outside work to devote more time to the winery, but found money getting a little tight, so he started a series of "experiments" to strech out the yield. Pruning practices changed, he cut a lot of corners which wouldn't pay off in the long run. Rumor even had it that the reisling was being watered to increase yield, and was justified as being more "German in style". Also in '72 he hired a cellar man to help who by '74 was doing most of the day to day work.

About this time a real financial bind was felt so investors were searched for and found in the nick of time. The problem was he had sold the investors on the fact he had 33 acres of vineyard and they poured in a considerable amount of money

1975 was the year of the Pinot Noir glut, they made 20,000 gallons just because the grapes were "so cheap".

A percentage of it was so poor as to be made into vinegar, and some (5,000) gallons even went down the drain. Coupled with this production jump was no change in the marketing via local representative; if things were slow in the cellar they would send someone out to sell a few stores. They tried a special selection label which meant nothing except perhaps a few wood chips and a $2.00 price increase.

The wine was still being played with and the investors being deceived as to acerage, though they did have a couple of notable sucesses with the unadulterated wines.

A warehouse was built on the premise and was used to store tractors, but they paid a high price for storage space 25 miles away. The investors had purchased new tanks, presses, etc. and leased them to the winery. If the winery needed money, short term loans were taken out. Coupling the interest on short term loans, lease payments, and wine storage fees with a weak sales effort brings us to the spring of 1978.

The investors buy out the founder and send him down the road and hire a winery manager who had experience in marketing at Gallo, Hublein, and most recently had been released from a fruit and berry winery down the road. He had come to the wine game in '64 from a job selling plastic wrap to supermarkets and as the heraelding newspaper article read "it was a short jump from there to the wine business." They gave him a free hand and he used it to write his own checks. The winery changed names and labels, and bottled the '77 wines under the new lable which wasn't such a good move as they were not only average wines, but they had been left relativly unattended during the transition period, so they didn't put their best foot forward. He then hired not only a California consultant but also a second winemaker which made for some tense moments, and the general manager was importing wine under the wineries licence using winery money and taking home the profits. They were selling their white press wine as a white table wine to a local restaurant at a loss with the justification that they were buying a place in the market The other grandiose scheams weren't working as the guy was misplaced with what is known as a Gallo mentality. The owners in the fall of '79 became disenchanted with Mr. Marketing and sent him off. Production is cut to 22,000 gallons because one of the growers isn't getting paid, which is a good way to cut production.

The new owners figure out a marketing plan which shows substantial gains in the first quarter of 1980, but at the end of the quarter the main owner closes the doors because the return is too slow and his wife is leaving him.

The major mis-managment factors which stand out are:

expansion of production beyond that of marketing-

short term money and leased equipment in a long term business

investors who don't understand the wine business and try to apply Madison Ave. economics-

poor managment, giving an open check book to a hired manager.

Quotes from the narator:

"One not only weeds out the right grape varieties in the area, one also must weed out investors"

"This in not a black mark for the local wine industry, nor for the industry in general, it just points out a combination of factors which didn't work in the 1970's"

Tons of Grapes Crushed During Season per Thousand Gallons of Fermenting Space.
(Assume 3.50 tons grapes per 1,000 gallons must)

Days Required to Fill and Empty Fermenter	Length of Fermenting Season (Days)								
	10	20	30	40	50	60	70	80	90
3	11.7	23.3	35.0	46.7	58.3	70.0	81.7	93.4	105.0
4	8.8	17.5	26.2	35.0	43.8	52.5	61.3	70.0	78.8
5	7.0	14.0	21.0	28.0	0	42.0	49.0	56.0	63.0
6	5.8	11.1	17.7	23.3	29.2	35.0	40.9	46.7	52.5
7	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
8	4.4	8.8	13.1	17.5	21.9	26.3	30.7	0	39.4
9	3.9	7.8	11.7	15.9	19.4	23.3	27.2	1	35.0
10	3.5	7.0	10.5	14.0	17.5	21.0	24.5	28.0	31.5

12

Tartrate Stability

A BRIEF REVIEW OF THE PRINCIPLES INVOLVED

FOLLOWED BY THE SYSTEMS PROPOSED BY THE

VARIOUS MANUFACTURES FOR RAPID STABILIZATION

Largely a cosmetic process to prevent the deposition of tartrate crystals in the bottle, tartrate stabilization is practiced by all large wineries and many of the small and medium sized plants as well. All it takes is one letter from a consumer saying they found ground glass in a bottle to start the winemaker thinking. I print these propriatary processes not because I expect the majority of my readers to run out and buy the equipment needed, but rather to familarize you with the principles involved. Technology starts in the large wineries and trickles down.

Some preliminary work on tartrate stability was published in 1958 by H. Berg and R. Keefer, Am. J. Enol. Vitic. 9:180-93(1958),in which they determined the tartrate stability in ethanol-water solutions. This was modified by work done in 1965 by B. Pilone and H. Berg because the tendenc of tartaric acid (KHT) to precipitate is affected by all other wine constittuents as follows.
Tendency for precipitation is increase by:

decrease in protein
decrease in temperature
decrease in tannin and pigments
decrease in sugar
decrease in glycerol
increase in alcohol content

KHT exists in a supersaturated solution in grapes and since it is less soluable in alcohol it precipitates during and after fermentation. Red wines with their increased pigment and increased residence time in the cellar demand less attention on this subject than white wines. The recent spate of research in fast tartrate stabilization was brought about by two factors: it is cheaper from an energy standpoint to stabilize a wine in one or two hours than chilling a tank for two weeks or a month, and West Germany banned the use of Cation exchangers as of July 18,1979 for sparkling wine production.

Koch and Shiller in 1963 suggested two phases in KHT precipitation: the formation of the crystal nuclei, and a crystallization phase. R. Boulton at the 1980 A.S.E. convention broke the crystallization phase into two components, the mass transfer of KHT ions to the vicinity of the crystal and the actual integration of that ion into the crystal. The first phase, the formation of crystal nuclei demands the most energy, as a concentration peak has to be reached to promote nuclei formation. This is the kick off point for the processes herein dicussed.

The traditional method of chilling wine to 22°to 25°F for table wines and 15°to 19°F for dessert wines and holding for two or more weeks is still used, as is throwing open the cellar doors on cold nights, but the promise of increased speed for less money is attractive.

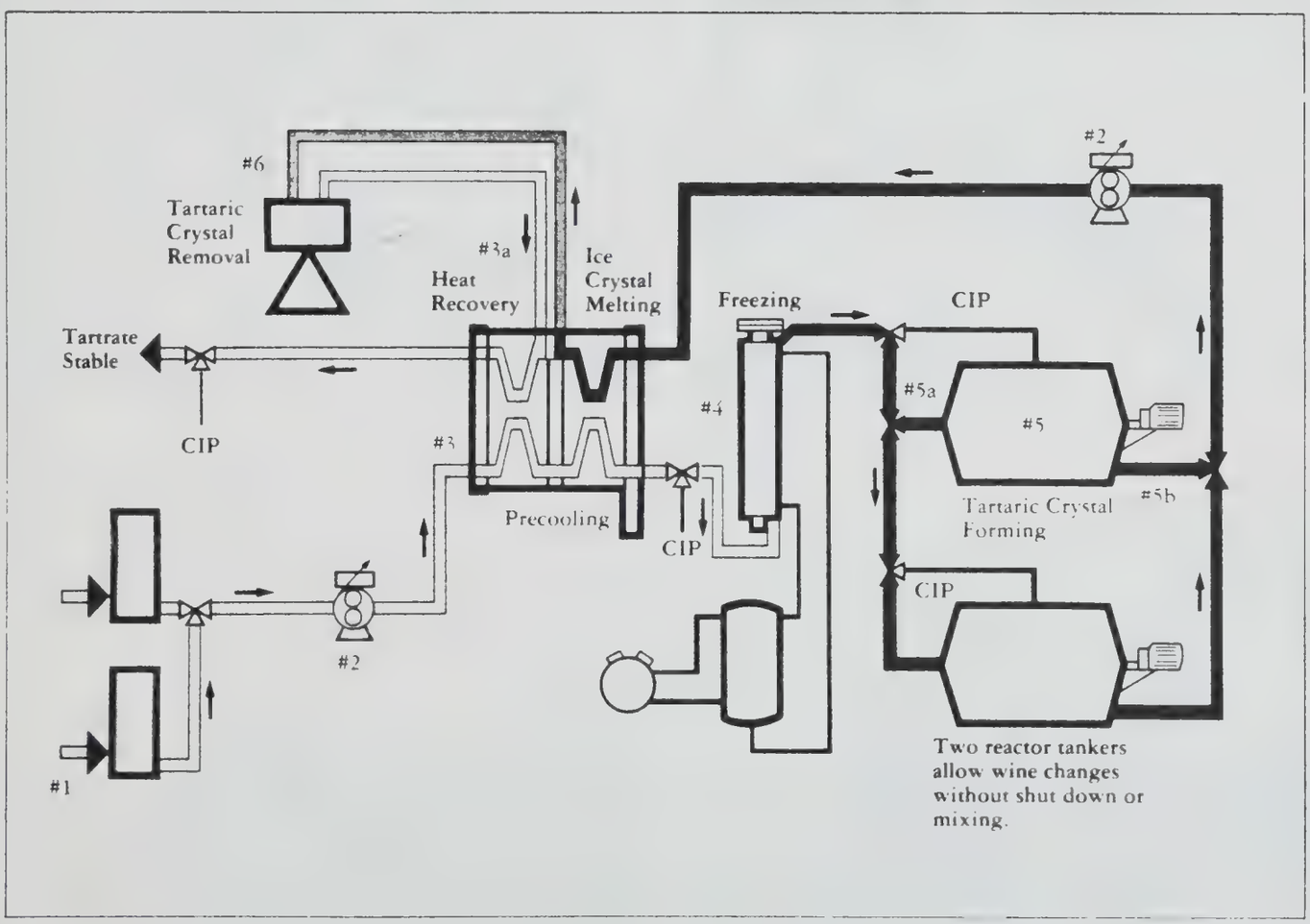
An obvious move is to circumvent the nuclei formation by seeding with KHT crystals. R. Boulton and P. Dumsford showed there to be little effect from varying the particle (seed crystal)number, and O. Rhein and F. Neradt showed 4 grams per liter to be an optimum seeding rate considering the more you add the more you have to get back out.

ations on a theme are promoted by Alfa-Laval (Crystalflow) and one by Cherry-Burrell in which a scraped surface heat exchanger is used to flush freeze the wine. The exchanger is composed of a hollow stainless steel cylinder about six inches in diameter around which is circulated the coolant. Inside the cylinder is a blade which turns and lightly scrapes the surface. Wine is pumped through the inner tube and the ice which forms on the cylinder wall is scraped off. The flow is regulated such that the exit stream contains 5-7% ice.

At least two principles are workin for nucleation here: the wine is concentrated-as the ice crystals contain mostly water thus the remaining potassium, acids and alcohol are concentrated to promote faster nucleheat exchanger and the ensuing collisions of the crystals with themselves and the walls of the heat exchanger cause the formation of new nuclei.

In Crystalflow ® by Alfa-Laval, the untreated wine (1) is pumped(2) through a conventional heat exchanger (3) then through a scraped surface heat exchanger (4), given some time for crystal growth (5) then pumped (2) back through enough of the heat exchanger to melt the ice, the tartaric crystals are removed via centrifugation or filtration (6). The wine then passes through the rest of the heat exchanger for heat recovery (3a) and out of the system. If the workings of their system is as polished as their literature then this is one to look at.

Crystalflow™

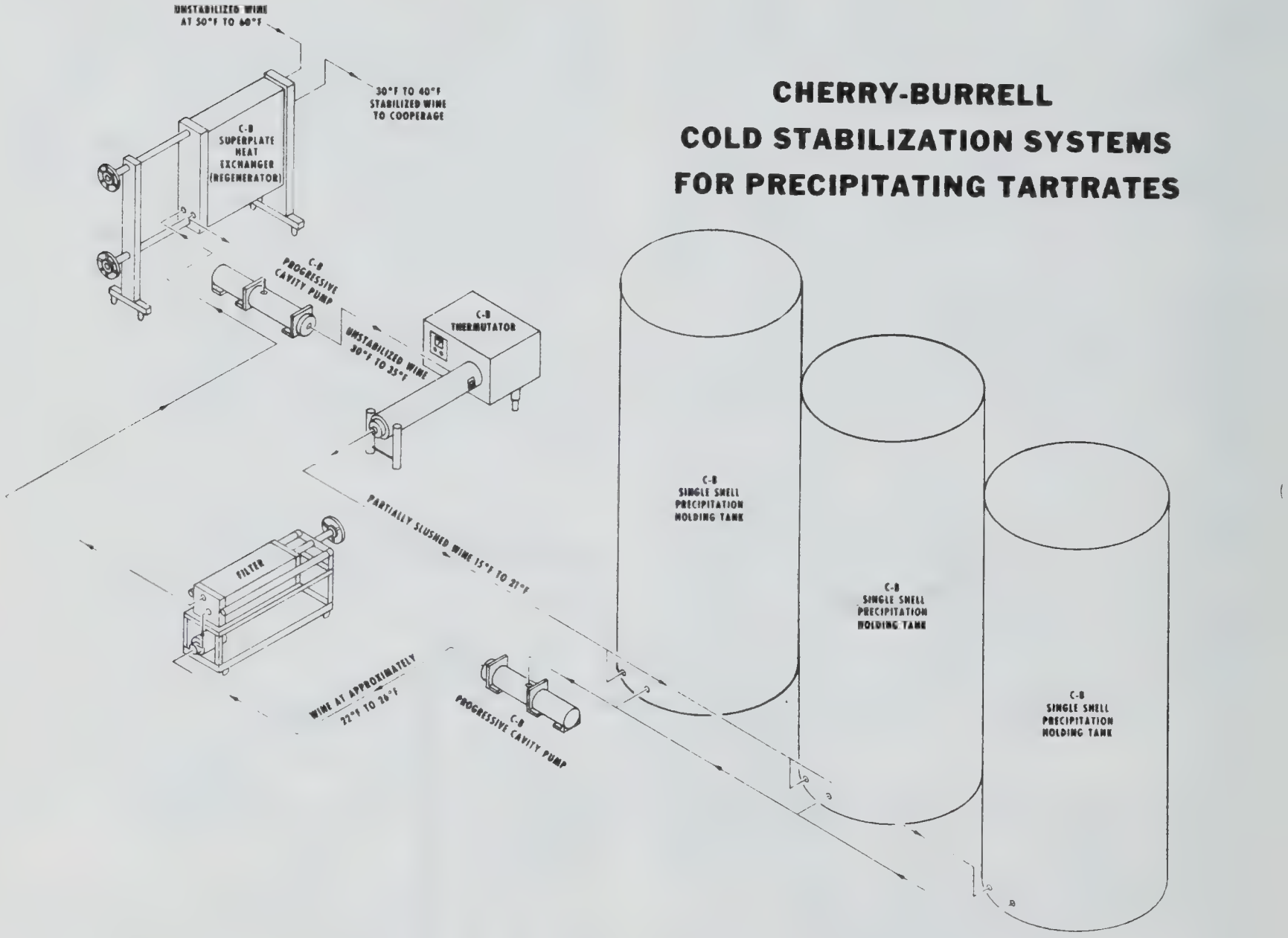


1 Wine

2 Wine and Tartaric Crystals

3 Wine, Ice-and Tartaric Crystals

In the Cherry-Burrell system the wine again is prechilled, then put through a scuaped surface heat exchanger, pumped into tanks where the ice is allowed to melt, The literature says several hours to several days are needed depending on the size of the tank. The treated wine is then filtered to remove tartrate crystals, then passed back through the heat exchanger. This process was designed a few years ago and dosenp appear as sophisticated as the crystal flow system which proports to be continuous.


UNSTABILIZED WINE AT 50°F TO 60°F
30°F TO 40°F STABILIZED WINE TO COOPERAGE
C-B SUPERPLATE HEAT EXCHANGER (REGENERATOR)
C-B PROGRESSIVE CAVITY PUMP
C-B THERMUTATOR
UNSTABILIZED WINE 30°F TO 35°F
PARTIALLY SLUSHED WINE 15°F TO 21°F
FILTER
WINE AT APPROXIMATELY 22°F TO 26°F
C-B PROGRESSIVE CAVITY PUMP
C-B SINGLE SHELL PRECIPITATION HOLDING TANK
C-B SINGLE SHELL PRECIPITATION HOLDING TANK
C-B SINGLE SHELL PRECIPITATION HOLDING TANK

CHERRY-BURRELL
COLD STABILIZATION SYSTEMS
FOR PRECIPITATING TARTRATES

This brings us to system #3 being developed and sold by Seitz-Werke (SWK Machines, Inc.) where the wine is chilled via conventional heat exchangers to about 32°F ¿It is seeded at the rate of 4 g/l with KHT crystals and agitated for 90 minutes to help with the mass transfer problem of keeping the target ions in contact with the crystals. The wine is then cold filtered and run back through a heat exchanger to reclaim some of the energy. The cryatals are perodically removed from the filter, ground down to size and reused.

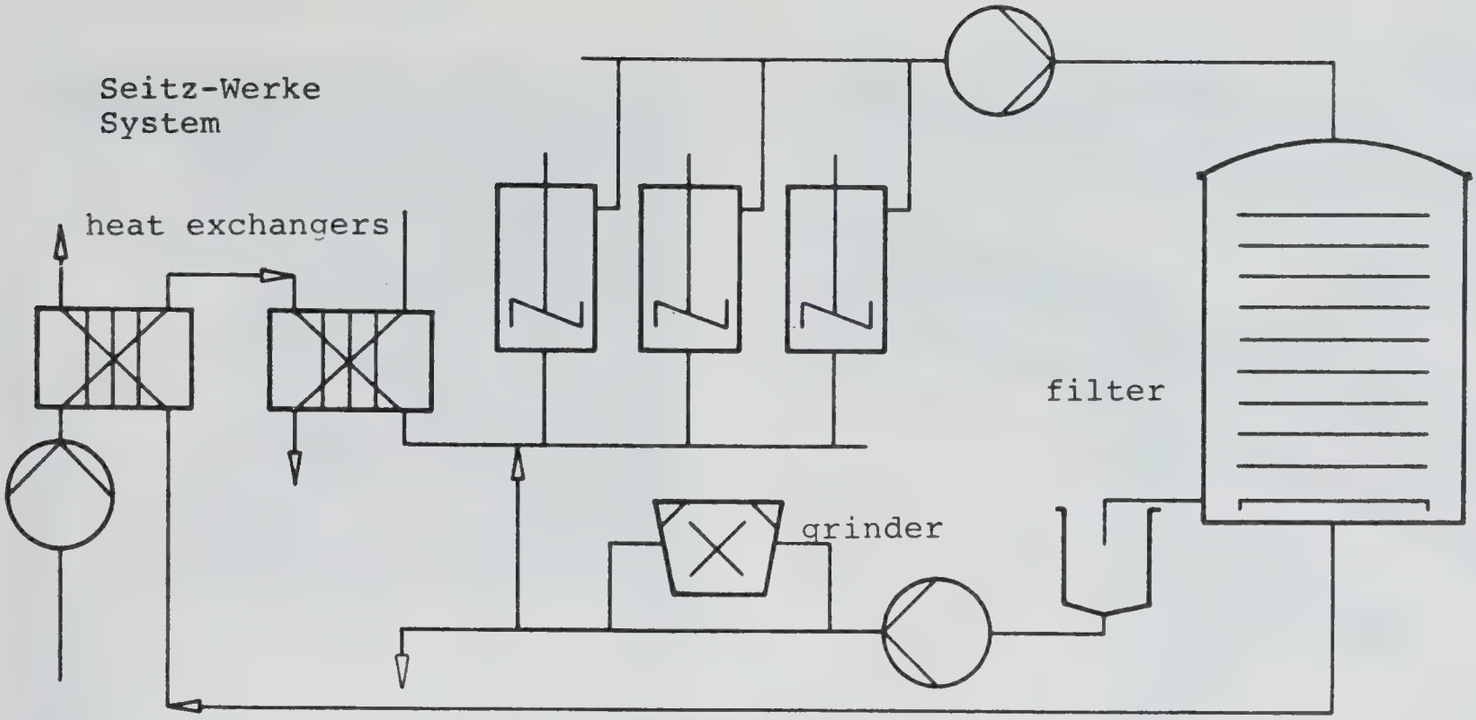
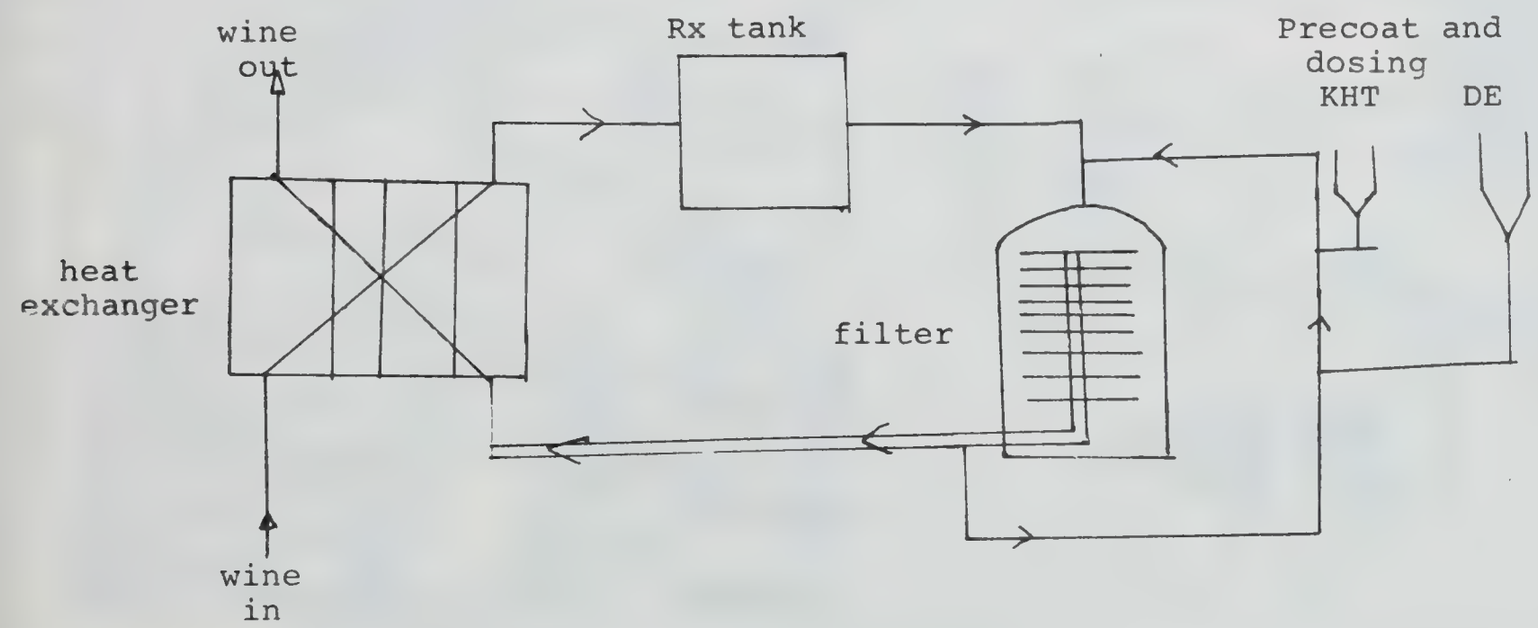
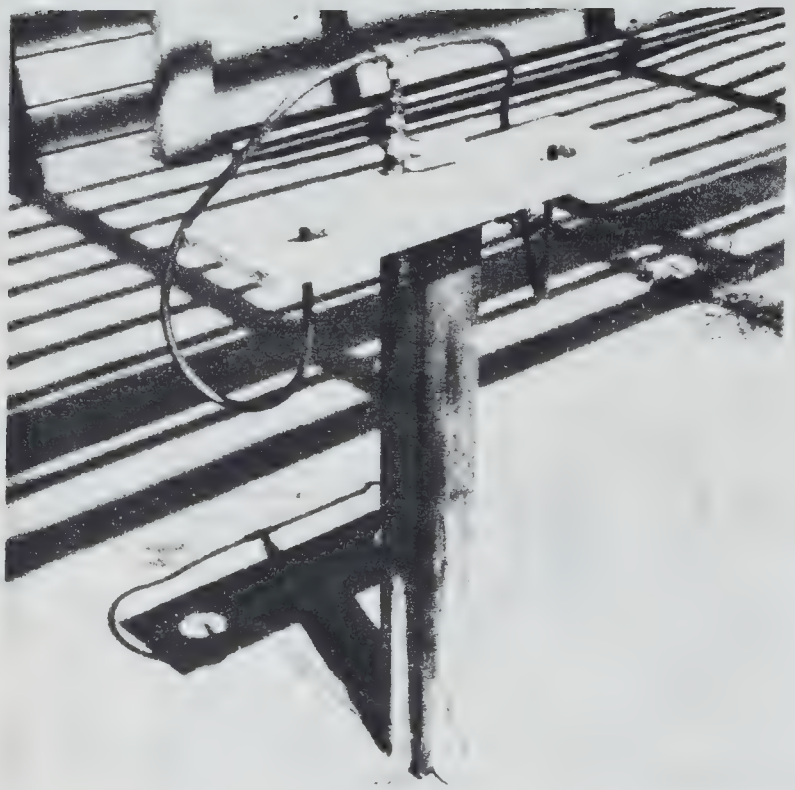


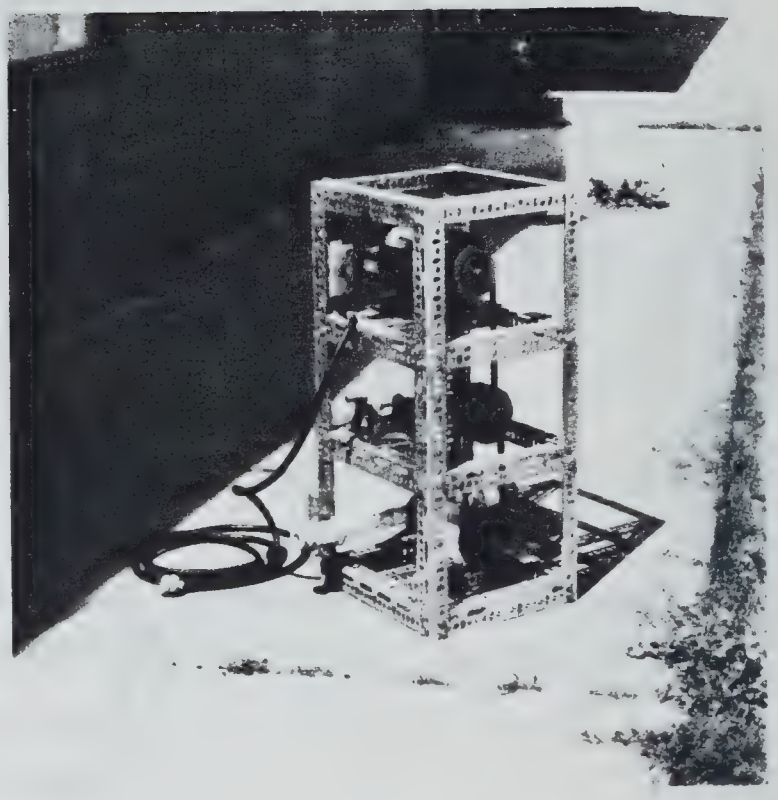
Fig. 2. Batch operation.

The last system developed by Schenk and Scott Labs. is termed the filtration technique. In this system the wine is chilled and held in an insulated tank to allow aggregation of the KHT molecules (precursor to crystals as it were). This is then passed through a bed of crystals which have been precoated onto a filter. By slowly passing the wine through this layer of KHT one promots crystal growth in the filter. Residence time in the filter bed is 6-7 seconds. A body feed of diatomatious earth is needed to keep the filter bed open, and a body feed of 1g/l KHT was used in the California trials The precoat was 125 gm cellulose, 1000g speed-plus DE and 1500 gm KHT per square meter.

The wine must be clean already as colloidal matter inhibits crystal growth. In a German trial a scraped surface heat exchanger was used and the filter was coated with KHT formed in the system, no external additions. This seems something of a hybred of the filtration technique and the two systems previously described.







upper left- bottle washer can be used with gas for sparging. upper right- variable speed jabsco soon to be on wheels.

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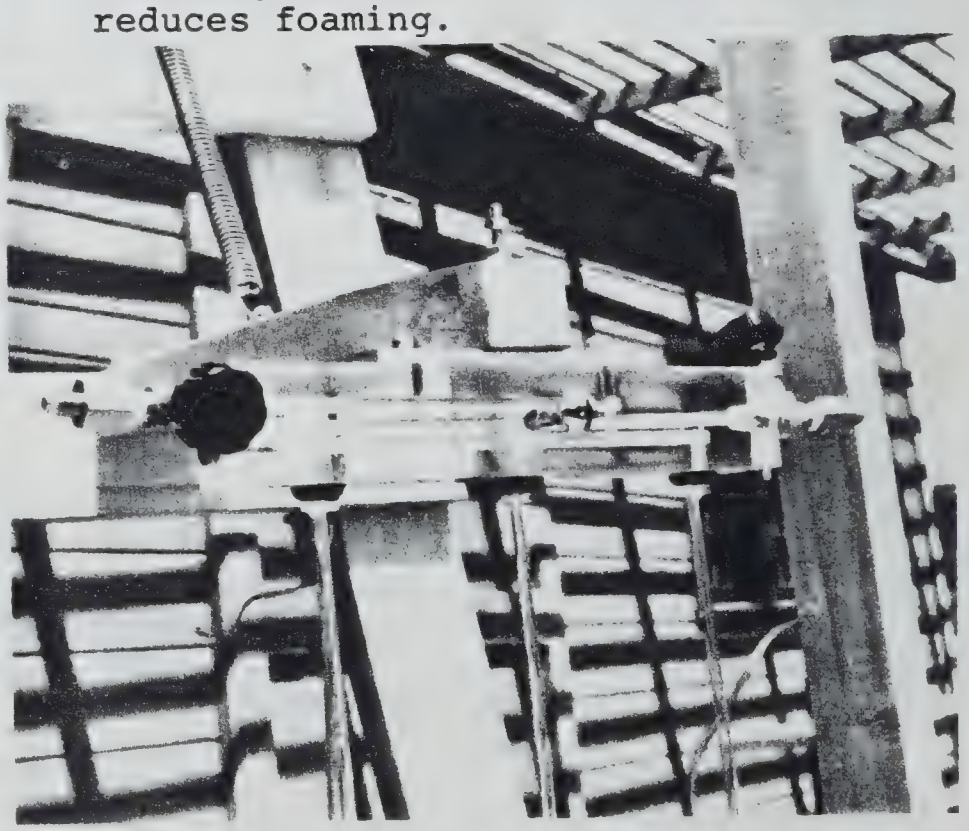
Fred Arterberrys craftsmanship is obvious not only in his wines, but also in his custom built equipment. A combination of the need for specialized equipment for carbonated wines, coupled with a tight budget has inspierd these beautifully built pieces of art.

lower photos- This filler allows filling of carbonated wines under bottling of carbonated wines under counter pressure to reduce foaming. The long flexible tube further reduces foaming.



Two Experiments on Wood

From Bruce Rector
Wine Production Consultant
P.O.Box 1411,
Pleasanton, Ca. 94566

Written by Bruce Rector
and Tony Norskog

When looking into the economics of purchasing scraped brandy barrels and new American Oak barrels, he opted to do both and monitored the increased evaporation from the thinner (shaved) barrels. The cost of the greater amount of wine needed for topping equaled the difference in the initial wood cost after 4 years. This experiment is a couple of years dated and used a $5.00 retail Zinfandel model, a scraped barrel cost of $19.00. and a new American Oak barrel at $60.00. Since the cost of wine has not kept pace with the price of American Oak the period of economic use is probably slightly longer.

Another experiment which is still in it's infant stages relates the flavor given a wine by the barrel and the effect of the searing heat used in barrel manufacture to bend the staves. Bruce, in cooperation with Custom Cooperage of Calistoga shaved 3 Burgundy coopered barrels and used a small torch to toast the inside of the staves. One recieved a heavy toasting, one a light toasting, and the third was the control, with no toasting. Bruce notes the heat was applied without water, whereas the manufacturers swab with water and the steam may open the grain more than just direct heat.

The jury is still out, but the flavor of the Chardonnay in the barrels showes three distinct characters and the tasting panel has changed it' preferences from the toasted to the untoasted with increased residence time.

Bruce is the winemaker at Stony ridge and notes he is available for consulting work specializing in: winery design and flow, blending, and saving marginal wines (he isn' known as Doc Rector for nothing).

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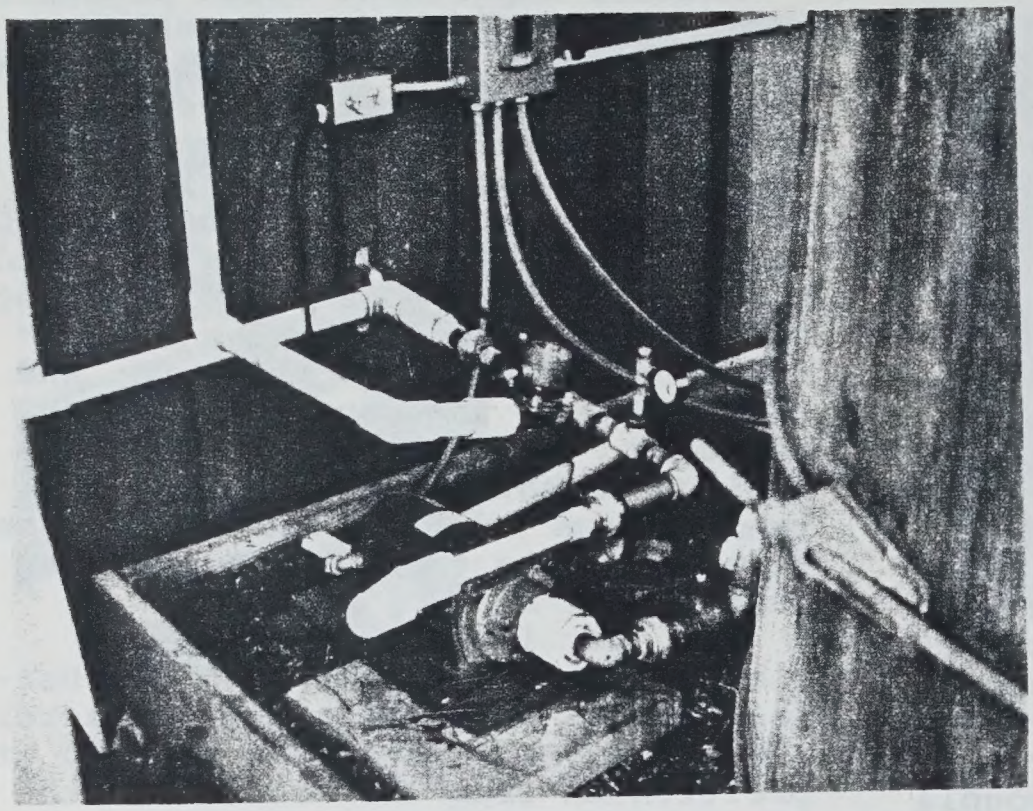

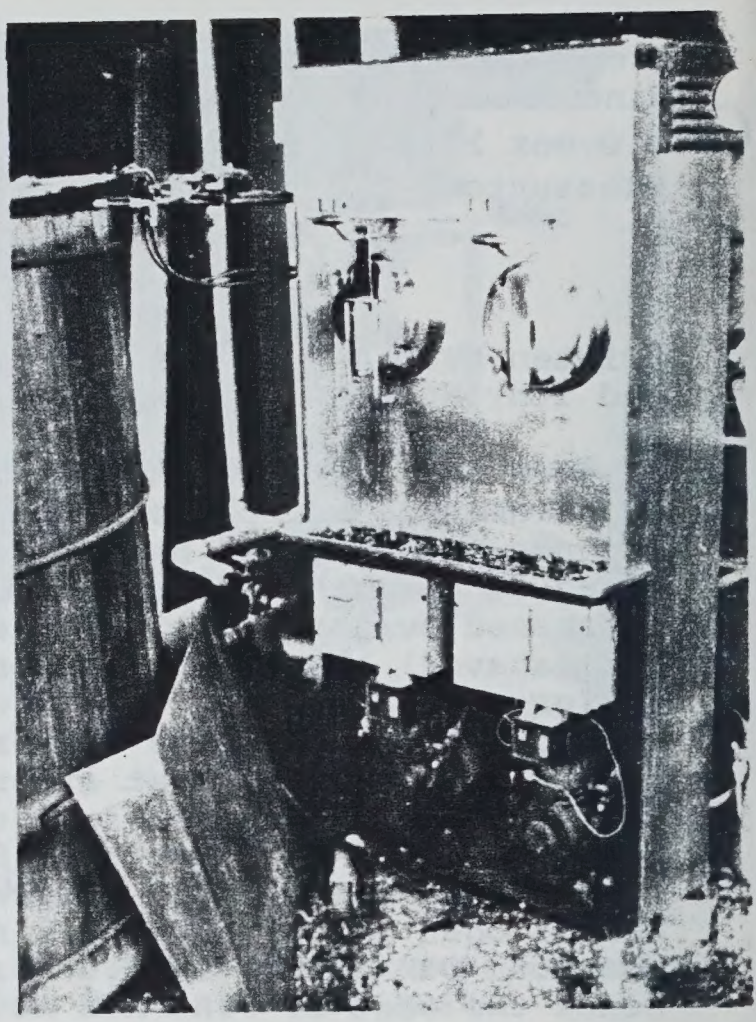

Yes, this really is a refrigeration system. Although difficult to make out the golden arches on the frostee freeze machine, it's not hard to see the compressers are still hard at work in food production. The primary coolant runs through a coil in the redwood tank to cool the water which is then circulated through the tank jackets via the swiming pool pump This issues' salvage technology award goes to Carey Cellars near Solvang, California.

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Vintage Ideas

The treatment of wine for excess tartaric acid is not as new as some would have us believe. From the annual report of the Chief Executive Officer to the Board of State Viticultural Commissioners for the year 1888, pg. 90 and 91.

"How to diminish or Destroy Tartness.-The treatment of tart wines differs according to the quantity of tartaric acid it contains. If the tartness is not unbearable, the wine can be improved by adding one or two quarts of old brandy to each barrel .

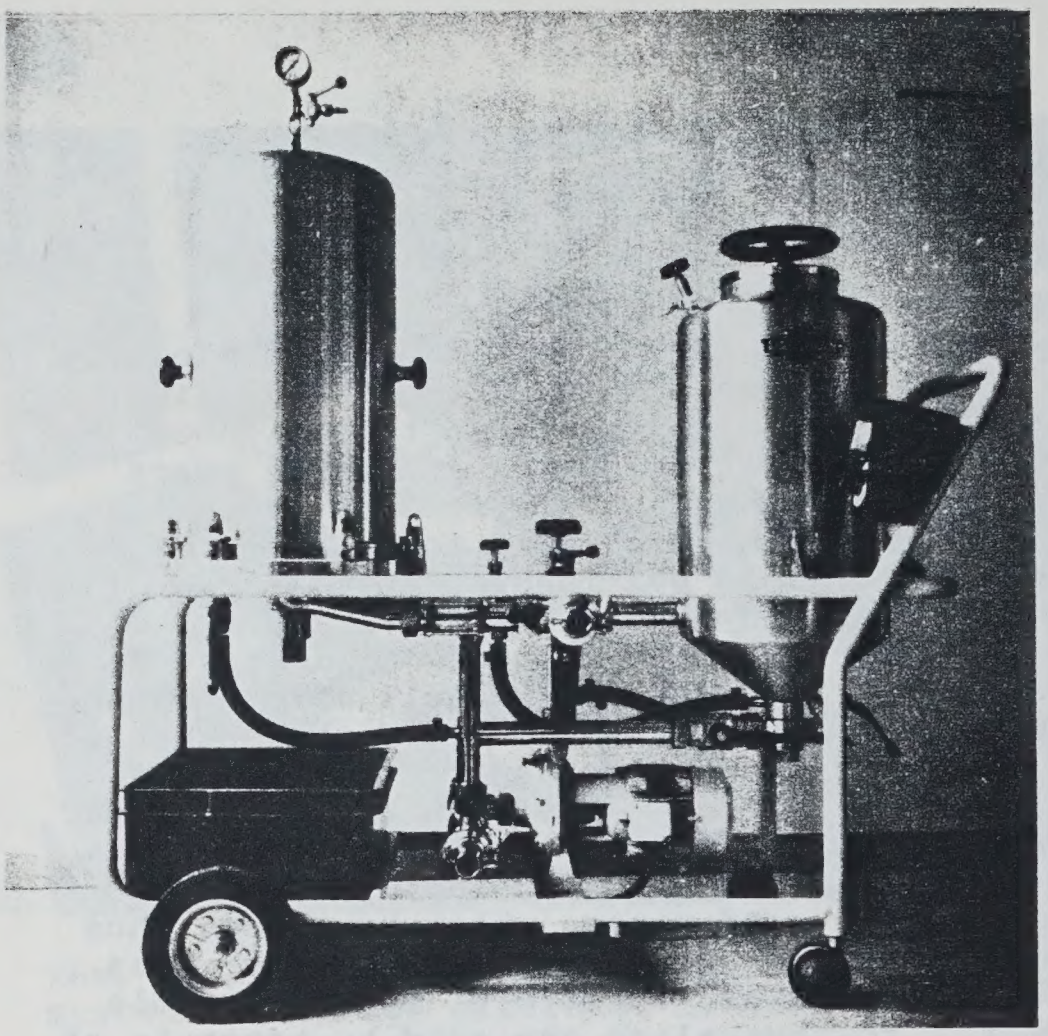
The wine contains more tartaric acid after leaving the fermenting vat than after the second slow fermentation in the barrels is through; this can be explained by the fact that the free tartaric acid combines with the tartrate of potash, which is contained in the wine, and forms with the latter a new salt, the bitartrate of potash (cream of tartar), which settles down with the lees or adheres to the walls of the cask. The result is that the wine is less tart after the first racking than when it is new; but if the tartness of the wine has attained a very high degree, it will be retained even when the after-fermentation is over. This acid can be neutralized by adding to the wine a convenient quantity of tartrate of potash. This salt will combine with a part of the tartaric acid, and form cream of tartar (bitartarate of potash), and after a few days of rest the wine will be less tart. The quantity which should be used is half a pound to a pound per barrel. In order to apply it, some gallons of the wine are drawn off, and the tartrate of potash, a handful at a time is thrown into the barrel; the whole should be well stirred, exactly in the same manner as when the wine is fined.

This process is not a new one. It was proposed in 1826 by M.A.Julien, who saw it in use in the neighborhood of Paris. In cold and rainy years certain wines are so tart that it becomes impossible to destroy their tartness by blending them with well matured wines; for if a wine is too tart- and if in order to improve it, it is blended with well matured wines it appears indeed as if the acid has been partially destroyed as soon as the blending has been done; but after a few days the superabundance of the tartaric acid ends up by attacking the good wines, which have been thus sacrificed to improve the poor ones.

It is, therefore, more advisable to neutralize the acid by tartrate of potash. It should be added, however that the practical application of this method has not yielded such good results as one would expect considering the theory only. I have often experimented on very tart wines and have used as much as thirty to forty-five grains of tartare per quart, but did not succeed in diminishing their extreme acidity appreciably. We insist, therefore, that the wine maker should do his utmost to prevent this defect. As far as the wine dealer is concerned, he should avoid buying wines which are too tart and which have no future.

The tartaric acid could be also neutralized by alkaline substances, such as the bicarbonates of lime, soda, or potash. By following this method it would be easier to destroy the excess of acid, than in any other way; but by neutralizing the acid, soluble salts are formed which remain in the wine, and which may have a bad influence on its hygenic properties. We won't speak, therefore, of this kind of treatment."

My thanks to Darrel Corti (the ubiquitous wine merchant) for loaning me this most informative book.



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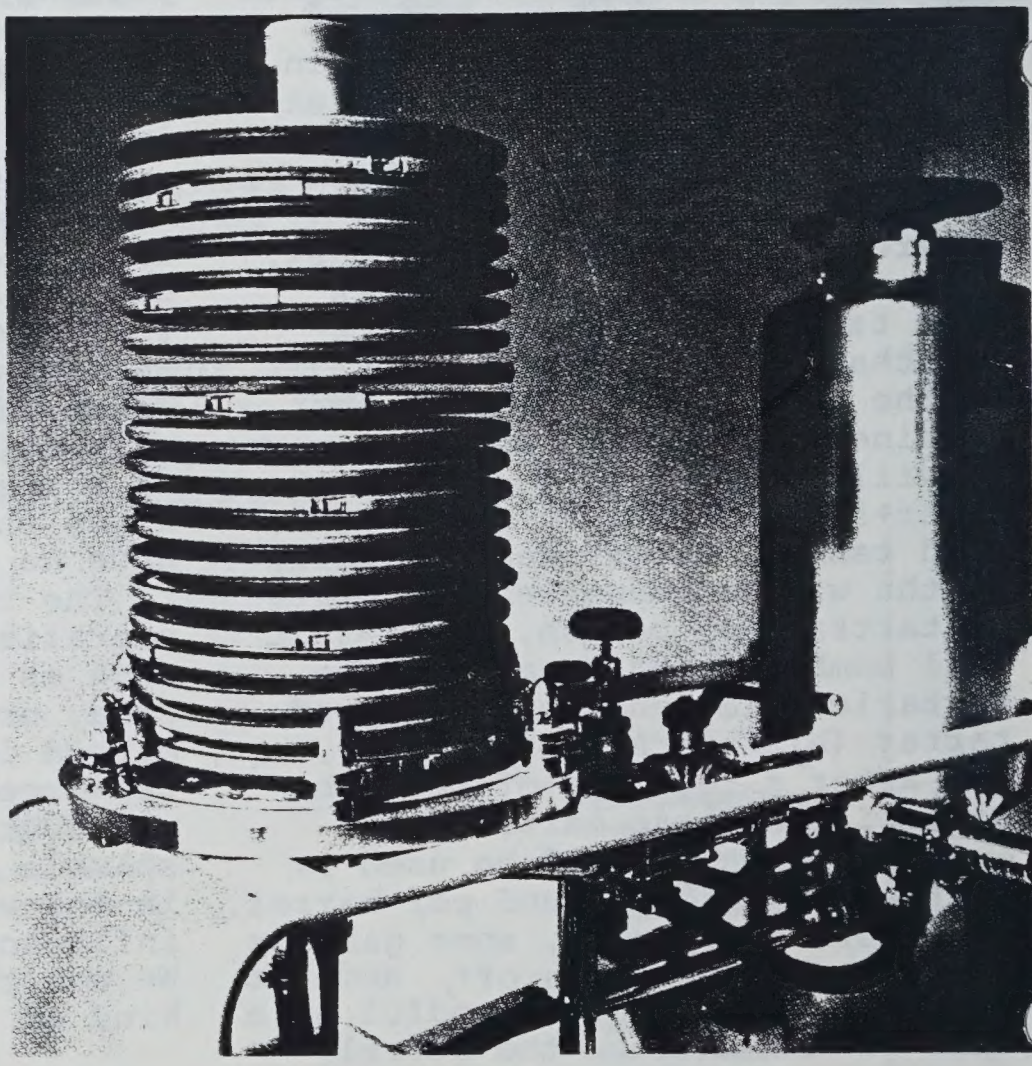

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